U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Sceloporus arenicolus*

COMMON NAME: Sand dune lizard

LEAD REGION: Region 2

INFORMATION CURRENT AS OF: August 2005

STATUS/ACTION:

___ New candidate
_X_ Continuing candidate
___ Non-petitioned
_X_ Petitioned - Date petition received: 6/6/2002
_ 90-day positive - FR date: ___
_ 12-month warranted but precluded - FR date: ___
_ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:
a. Is listing warranted (if yes, see summary of threats below)? Yes
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes
c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.
During the past 12 months, almost our entire national listing budget has been consumed by work emergency listings; essential litigation-related, administrative, and program management functions; compliance with court orders or court-approved settlement agreements requiring petition findings or listing actions. Funds available to work on proposals to list the sand dune lizard are not available. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov/).
___ Listing priority change
Former LP: ___
New LP: ___
Date when the species first became a Candidate (as currently defined): October 17, 2001

___ Candidate removal: Former LP: ___

___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
___U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.
___ F – Range is no longer a U.S. territory.
___ I – Insufficient information exists on biological vulnerability and threats to support listing.
___ M – Taxon mistakenly included in past notice of review.
___ N – Taxon does not meet the Act's definition of "species."
___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Reptiles, Iguanidae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: New Mexico and Texas

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Southeastern New Mexico (Chaves, Eddy, Lea, and Roosevelt Counties) and adjacent West Texas (Andrews, Crane, Ward, and Winkler Counties)

LAND OWNERSHIP: The sand dune lizard occurs on Bureau of Land Management (BLM), State of New Mexico, State of Texas, and private lands. In New Mexico, lands under State or Federal government jurisdiction account for approximately 70 percent of the lizard's range, whereas private lands represent approximately 30 percent. The land ownership within the sand dune lizard's range in Texas is unknown.

LEAD REGION CONTACT: Susan Jacobsen, 505-248-6641

LEAD FIELD OFFICE CONTACT: New Mexico Ecological Services Field Office, Jennifer Parody, 505-761-4710.

BIOLOGICAL INFORMATION: The information in this candidate form is primarily a result of a multiyear study of the sand dune lizard funded through section 6. Additional information contained in our files and the petition received on June 6, 2002, was also reviewed and considered.

The information below is based on the draft management plan for the sand dune lizard, *Sceloporus arenicolus,* in New Mexico (Painter et al. 1999) and communications with the principal investigator, Charlie Painter, New Mexico Department of Game and Fish (NMDGF). An addendum to the management plan was submitted to the U.S. Fish and Wildlife Service (Service) in 2002.

The sand dune lizard has been reviewed taxonomically and is recognized as a distinct species (Smith et al. 1992, cited in Snell et al. 1997; Degenhardt et al. 1996). The sand dune lizard is

endemic to a small area in southeastern New Mexico (Chaves, Eddy, Lea, and Roosevelt Counties) and adjacent west Texas (Andrews, Crane, Ward, and Winkler Counties). It has the second-most restricted range of any native lizard in the United States (Degenhardt et al. 1996). Within this area, the known occupied and potentially occupied habitat is only 1,697 kilometers^2 (655 miles^2) in New Mexico, and an unknown amount in west Texas.

The sand dune lizard is active between April and September. Females can reach sexual maturity during their first spring following hatching. Females produce one to two clutches per year, averaging about five eggs each. Hatchlings appear between July and September. Sand dune lizards feed on ants, small beetles, crickets, grasshoppers, and spiders. Most feeding takes place within or adjacent to patches of vegetation (e.g., shinnery oak). Individuals are extremely wary, and when disturbed, take shelter in burrows, under the sand, or beneath leaf litter.

The sand dune lizard's distribution is localized and fragmented (i.e., known populations are separated by vast areas of unoccupied habitat), and the species is restricted to sand dune blowouts associated with active sand dunes with shinnery oak (*Quercus harvardii*) and scattered sandsage (*Artemisia filifolia*). Sand dune lizards are not found at sites lacking shinnery oak sand dune habitat. Fitzgerald et al. (1997) observed isolated areas of apparently suitable habitat that did not contain sand dune lizards. It is possible that these observations are the result of local extinction events in isolated areas where recolonization is either impossible or has not yet occurred (Snell et al. 1997). Therefore, increased fragmentation of shinnery oak dune habitat from removal of shinnery oak and oil and gas development may isolate sand dune lizard populations, making extinction of the species likely (Snell et al. 1997). In fact, significant amounts of habitat disturbance have already occurred within the range of the sand dune lizard, and there is little doubt that the current distribution and range is a small, but important part of its historical range (Snell et al. 1997). The reduction in its range has not been quantified. The potential to renew a shinnery oak removal program and continued oil and gas development on public and private lands makes the current status of the sand dune lizard precarious. In fact, Snell et al. (1997) concluded that management or conservation activity may not prevent the extinction of the sand dune lizard.

The limited geographic range of the sand dune lizard poses a significant threat of extinction for this species given the loss and degradation of suitable habitat and increased risks of extinction from the present or threatened destruction of its habitat and random or human-caused events. Considering the magnitude and imminence of threats and the vulnerability of extant localities, the sand dune lizard is likely in danger of extinction in all or a significant portion of its range (Snell et al. 1997).

THREATS

A. <u>The present or threatened destruction, modification, or curtailment of its habitat or range</u>. Extensive surveys, conducted in conjunction with a 5-year study, documented sand dune lizards at half of the sites surveyed (Painter et al. 1999). It is clear that shinnery oak removal (e.g., by treating with herbicides) results in dramatic reductions and extirpation of sand dune lizards (Snell et al. 1997). For example, extirpation of sand dunes lizards was confirmed by Snell et al. (1997) from areas that were treated with herbicides to remove shinnery oak. Painter et al. (1999)

estimate that about 25 percent of the total sand dune lizard habitat in New Mexico has been eliminated from 1989 through 1999.

Similarly, oil and gas extraction activities have destroyed and fragmented shinnery oak dune habitat and resulted in widespread population reductions. Sias and Snell (1998) reported a negative relationship between oil well density and sand dune lizard abundance, and they detected an environmental sensitivity not found in sympatric reptile species. Extensive oil field development, residual toxic contamination, and reduced and fragmented habitat increase the risk of extinction for the sand dune lizard (Painter et al. 1999).

The Southwest Stakeholder Group (see CONSERVATION MEASURES PLANNED OR IMPLEMENTED section below for more information on this group) has created a Conservation Strategy in the inter-dune areas of shinnery oak flats to determine if the hatchling sand dune lizards used these areas for dispersal. In 2002, a series of pitfall trap transects were set. A few juvenile sand dune lizards were trapped in these areas indicating that these shinnery oak flats between the sand dunes habitat may be important for dispersal. In the past, oil and gas development has been directed into the shinnery oak flats and out of the dune complexes to lessen the impact to the sand dune lizard. However, development in the shinnery oak flats may be affecting dispersal of the sand dune lizards from one dune complex to another (C. Painter, New Mexico Department of Game and Fish, pers. comm. 2003).

Oil and gas development in southeastern New Mexico has accelerated in recent years. Currently, more than 60 percent of land within the New Mexico range of the sand dune lizard has been leased by BLM or the State Land Office (SLO) for oil and gas exploration (Gregory Homan, BLM, pers. comm. 2004). Of particular concern is the dense development since 2002 of two sections in Lea County (T17S, R31E, S36 and T17S, R32E, S31, managed by the SLO and BLM, respectively). This location once had one of the most predictable populations of sand dune lizards in the State of New Mexico and was used for years as an observation site for students and researchers. By the summer of 2003, over 40 oil wells had been constructed in these sections, many of them directly on top of dunes. Research has demonstrated that, at 13 wells per section, sand dune lizard populations decline by a minimum of 25 percent. An estimated 50 percent decline in sand dune lizard populations can be expected in areas with 30 oil and/or gas wells per section (Sias and Snell 1998). Thus, forty wells are likely to severely impact this population (C. Painter, New Mexico Department of Game and Fish, pers. comm. 2005).

It is not known whether livestock grazing directly threatens the sand dune lizard. However, range improvement projects for livestock grazing are the main impetus for shinnery oak removal; therefore, habitat manipulations associated with livestock grazing can result in a significant indirect effect to the species.

B. <u>Overutilization for commercial, recreational, scientific, or educational purposes</u>. The sand dune lizard is not a commercially valuable species, but may be increasingly sought by collectors due to its increasing rarity. Areas inhabited by this species are open to public access, and its populations are thought to be small and localized. Although scientific collecting is not thought

to represent a significant threat, localized populations could become impacted and possibly extirpated by improper collecting.

C. Disease or predation. Not known to be a factor threatening the sand dune lizard.

D. The inadequacy of existing regulatory mechanisms. The sand dune lizard occurs on lands managed by the BLM, SLO, the States of New Mexico and Texas, and private entities. The BLM has the authority to manage the land and activities under their administration to conserve the sand dune lizard. For example, the sand dune lizard is listed as a species of concern by the Roswell and Carlsbad BLM Field Offices, and they have reduced potentially adverse impacts to the sand dune lizard by limiting the amount of shinnery oak removal within these resource areas. However, it is unknown whether this reduction will continue. The BLM currently does not have a management plan that addresses threats to the species (e.g,. shinnery oak removal, oil and gas development, grazing, etc.) or specific conservation and recovery needs of the sand dune lizard.

Private lands and SLO-managed lands where this species occurs each constitute an estimated 30 percent of the estimated range of the sand dune lizard (Painter et al. 1999). These lands play a substantial role in the lizard's continued existence. There are no local or state regulatory mechanisms pertaining to the sand dune lizard on State or non-Federal lands. Nor is there SLO policy in place to protect sensitive species in Eddy or Lea County. Much of the range of the sand dune lizard falls within proven oil and gas areas that are under intense pressure for development (David Coss, SLO, pers. comm. 2004). The sand dune lizard was uplisted from threatened to endangered under the New Mexico Wildlife Conservation Act (i.e., the State's endangered species act) which affords this species protection from take. The sand dune lizard is not State listed as threatened or endangered in Texas. Finally, there are no other federally listed species within the range of the sand dune lizard that might provide umbrella protection for the species.

E. Other natural or manmade factors affecting its continued existence. The geographically restricted range of the sand dune lizard increases the possibility that a human-caused or natural event could eliminate this species.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED: Status assessment of the sand dune lizard throughout its range in New Mexico is ongoing, with inventory efforts being coordinated between the NMDGF and the Service. Field research efforts have concluded following a 5-year study funded through section 6 monies. We received and reviewed a management plan from NMDGF for the sand dune lizard in 1999, as part of these studies. A revised management plan was received in June of 2002.

Since February 2003, the Southeast Stakeholder Group has met "*to create a conservation strategy for the conservation of shinnery oak habitat that offers a range of specific actions for the recovery of the Lesser Prairie-chicken and sand dune lizard and takes into account other uses of the land*." The group has broad representation from the oil and gas and livestock industries, conservation/environmental interests, local governments, sportsmen/recreation, State and Federal agencies (SLO, New Mexico Department of Agriculture, Natural Resources Conservation Service, Service, and BLM), and independent technical advisors. The group completed its Conservation Strategy that outlines broad policies and plans for land management

and a set of voluntary conservation efforts by stakeholders. The group submitted the Conservation Strategy for approval to the BLM on February 26, 2005. The group has recommended 500 meter buffer areas for herbicide spraying in occupied and suitable habitat and dispersal corridors. Oil and gas development recommendations include not placing well pads on or within 100 meters of sand dunes, no more than 13 well pads per square mile, and minimize new well pad development in occupied and suitable habitat. The group also recommended restricting off road vehicle use to existing recreational areas and a developing public outreach awareness program.

Sand dune lizard population and distribution surveys are scheduled for the Texas portion of its range. A grant through the TPWD will fund the surveys (C. Painter, New Mexico Department of Game and Fish, pers. comm. 2005). New Mexico Department of Game and Fish will assist the contractor with the surveys (C. Painter, New Mexico Department of Game and Fish, pers. comm. 2005).

SUMMARY OF THREATS: The distribution of sand dune lizards is localized and fragmented, and this species is a habitat specialist. Therefore, impacts to its habitat will most likely greatly decrease populations. If current herbicide application continues and oil and gas development progresses as expected, the magnitude of threat to sand dune lizards will increase. Continued pressure to develop oil and gas resources in areas with sand dune lizards poses an imminent threat to the species.

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	**Imminent**	Monotypic genus	1
		Species	**2***
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

RATIONALE FOR LISTING PRIORITY NUMBER:

Magnitude: The population of sand dune lizards has been impacted by the spraying of the herbicide, Tebuthiuron, to control shinnery oak and by oil and gas field development. For example, it is estimated that 25 percent of the total sand dune lizard habitat in New Mexico has been eliminated in the past 15 years from the application of Tebuthiuron (Painter et al. 1999).

An estimated 50 percent decline in sand dune lizard populations can be expected in areas with 30 oil and/or gas wells per section (Sias and Snell 1998). The distribution of sand dune lizards is localized and fragmented and this species is a habitat specialist; therefore, impacts to its habitat will most likely greatly decrease populations. If current herbicide application continues and oil and gas development progresses as expected, the magnitude of threat to sand dune lizards remains high.

Imminence: The two main threats to sand dune lizards include the application of herbicides to control shinnery oak and oil and gas exploration/development. We are unable to predict when or where future herbicide application will occur. Therefore, it is assumed that herbicide treatment threats are not imminent. However, continued pressure to develop oil and gas resources in areas with sand dune lizards poses an imminent threat to the species.

__X__ Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed? Yes

Is emergency listing warranted? No. Given the information we currently have on the status of the populations, threats, and conservation actions in New Mexico and Texas, we do not believe this species should be emergency listed. Since February 2003, the Southeast Stakeholder Group has been working to create a conservation strategy for the conservation of shinnery oak habitat and the sand dune lizard. The group has created a Conservation Strategy that outlines broad policies and plans for land management and a set of voluntary efforts by stakeholders. Once this plan is in place, we will be able to make a better assessment of the status of the species.

DESCRIPTION OF MONITORING: Staff from the New Mexico Ecological Services Field Office attends meetings of the Southeast Stakeholder Group, and we receive annual monitoring and species status reports from the State of New Mexico. The Service will continue to monitor the recommendations and progress of the Southeast Stakeholder Group. We also meet with the State's sand dune lizard lead biologist for section 6-funded research projects or his supervisor regularly and have participated on site visits to suitable and occupied sand dune lizard habitats in New Mexico. Texas Parks and Wildlife Department has awarded a grant to conduct sand dune lizard surveys in the Texas portion of its range. New Mexico Department of Game and Fish will assist with the surveys.

COORDINATION WITH STATES

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment: New Mexico

Indicate which State(s) did not provide any information or comments: Texas

LITERATURE CITED

Degenhardt, W. G., C. W. Painter, and A. H. Price. 1996. The amphibians and reptiles of New Mexico. University of New Mexico Press, Albuquerque. 431 pp.

Fitzgerald, L. A., C. W. Painter, D. S. Sias, and H. L. Snell. 1997. The range, distribution, and habitat of *Sceloporus arenicolus* in New Mexico. Final report to New Mexico Department of Game and Fish. Contract #80-516.6-01. 31 pp.

Painter, C. W., D. S. Sias, L. E. Fitzgerald, L .L. S. Pierce, and H. L. Snell. June 15, 1999. Management plan for the sand dune lizard, *Sceloporus arenicolus*, in New Mexico.

Sias, D. S., and H. L. Snell. 1998. The sand dune lizard *Sceloporus arenicolus* and oil and gas development in southeastern New Mexico. Final report of field studies 1995-1997. Final report to New Mexico Department of Game and Fish. Contract #80-516.6-01. 27 pp.

Smith, H. M., E. L. Bell, J. S. Applegarth, and D. Chiszar. 1992. Adaptive convergence in the lizard Superspecies *Sceloporus undulatus*. Bulletin of the Maryland Herpetological Society 28:123-149.

Snell, H. L., L. W. Gorum. L. J. S. Pierce, and K. W. Ward. 1997. Results from the fifth year (1995) research on the effect of shinnery oak removal on populations of sand dune lizard, June 15, 1999. Management plan for the sand dune lizard, *Sceloporus arenicolus*, in New Mexico. Final report to New Mexico Department of Game and Fish. Contract #80-516.6-01. 13 pp.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: /s/ Rich McDonald 11/17/2005
ActingRegional Director, Fish and Wildlife Service Date

Concur: August 23, 2006
Director, Fish and Wildlife Service Date

Do not concur:
Director, Fish and Wildlife Service Date

Date of annual review: 8/24/05
Conducted by: Santiago Gonzales/Lyle Lewis; New Mexico Ecological Services Field Office